

SKF Enlight – Smartify your wind turbine inspection

Helping you get the most from your turbine data





Reduced total cost of ownership throughout the turbine life cycle

Industrial operations everywhere understand that effective management of assets throughout their life cycle can deliver significant value and reduce ownership costs. SKF Life Cycle Management is making it possible for a range of challenging applications, including wind turbines.

Thanks to more than a century of bearing manufacturing, plus hands-on experience in every major industrial application area, SKF has developed a unique understanding of rotating machinery. By applying a life cycle management approach, we combine our technology platforms and our industry knowledge to help end-user customers meet their challenges. Having a better understanding of end-user requirements, we bring that knowledge to bear on our product offerings to original equipment manufacturers, in turn helping them meet business challenges of their own.

More value at every stage

SKF Life Cycle Management is our proven approach for maximizing productivity while minimizing the total cost of machine ownership over every life cycle stage, from specification, design and manufacturing to operation, maintenance and repairs. With SKF Life Cycle Management, we can add value throughout the turbine life cycle to help you:

- Maximize productivity and profitability
- Reduce total cost of ownership
- Minimize maintenance
- Improve reliability and safety
- Improve energy and resource efficiency
- Reduce the cost of energy produced
- Extend turbine service life

SKF Enlight will be an excellent tool to support the whole asset lifecycle.

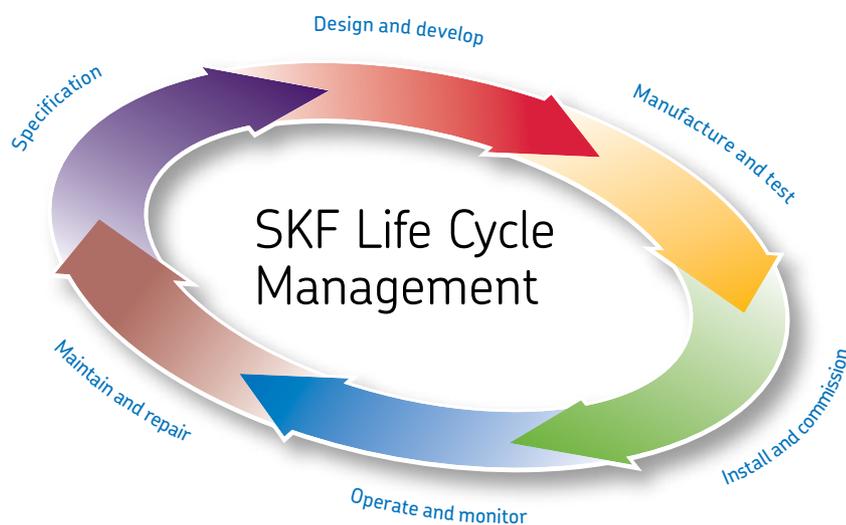
SKF Enlight

By implementing SKF Enlight into daily operations, paperwork can be reduced dramatically. As an integrated system for documentation of operation and maintenance tasks, SKF Enlight will enable you to keep track of your whole asset history within one integrated system.

SKF Enlight will mainly support maintenance and assembly teams as a visual inspection support tool. It will guide the team through the turbine and can make inspections faster, more accurate, safer and ultimately cheaper.

Since it is connected to the cloud, back-end data can be made available worldwide via the web interface within minutes. For audits, it will be extremely easy to present the latest inspection reports for each turbine within minutes.

And finally, when it comes to the end-of-warranty inspection, optional Bluetooth sensor technology can be used for documenting conditions of different mechanical and electrical components of the asset.

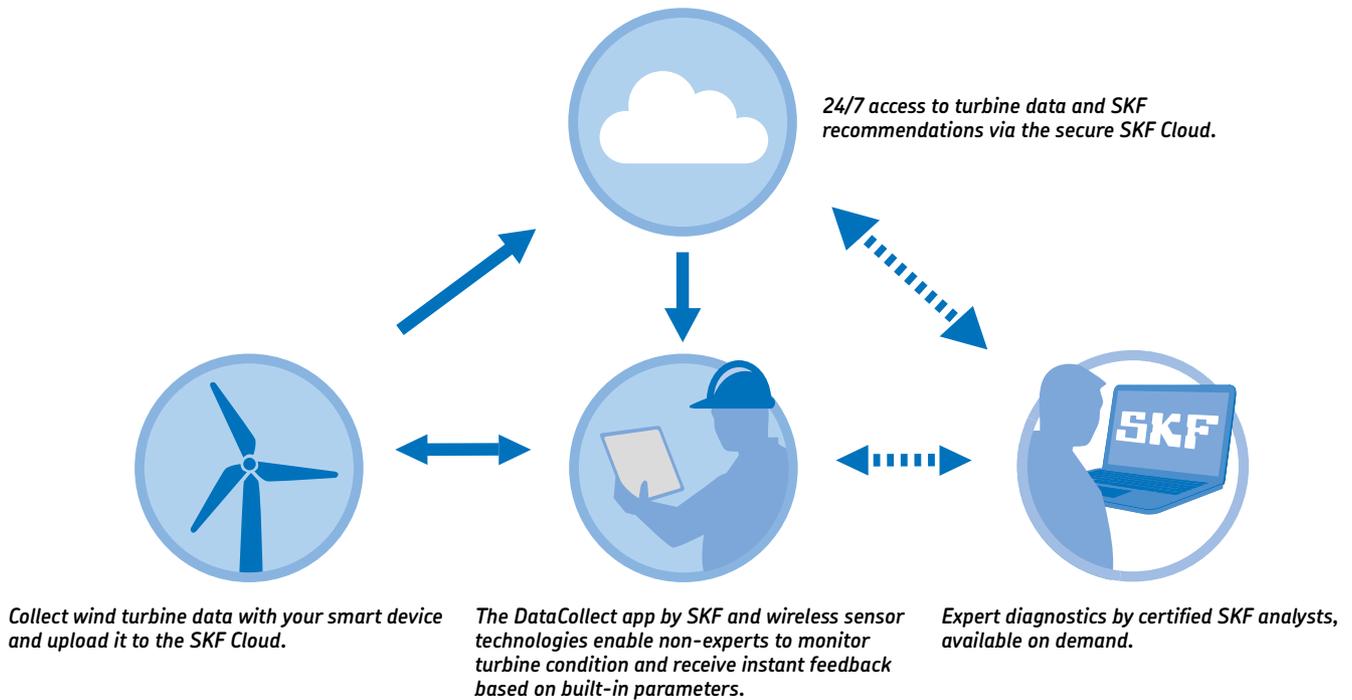


Smartify your wind turbine inspection with SKF Enlight



SKF Enlight can help you:

- Improve inspection efficiency and reduce costs
- Reduce capital costs for equipment and software
- Reduce risk of misunderstanding implications of data
- Engage more of your staff in the maintenance programme
- Collect more information to enable better decision making
- Standardize inspection data across service teams
- Make inspection reports available in one database in standardized format
- Move from pure data collection to valuable knowledge



SKF Enlight is a mobile and cloud-based solution that combines industrial apps developed by SKF with a range of mobile platforms and sensor technologies to provide easy to use, flexible solutions for many maintenance and reliability applications.

The DataCollect app by SKF combines the intuitiveness of an iOS or Android app with the power to customize a wide range of input types used for the documentation of audits, quality assurance, safety inspections, machine operator inspections, work orders and more.

Users can customize SKF Enlight by downloading a range of forms which add application specific functionality, link as required to related sensor technologies, and can also connect you directly to knowledge-based SKF subscription services. As a result, users can quickly assess machine health and spot potential problems.

SKF Enlight moves collection of data from pen and paper to electronic systems, enabling a broad range of on-site staff to collect turbine data for better decision making with increased efficiency, and at reduced cost.

Cloud solutions

SKF Enlight connects wirelessly to the SKF Cloud, offering access to a range of associated SKF services and expertise directly from the DataCollect app by SKF. All collected data is immediately uploaded and securely stored in the SKF Cloud for easy retrieval from anywhere, anytime. The SKF Cloud provides a highly customizable, configurable solution that can store and display data, drawings and photos.

Connecting to SKF knowledge

Where problems are more complex, SKF Enlight can connect customers on demand directly to SKF knowledge-based services such as those available from SKF Remote Diagnostic Services. For more information, please contact your local SKF sales representative.

Powerful information, flexible functionality.

How SKF Enlight works

SKF Enlight can save you time and money by helping you document inspection data and putting instant reporting features at your fingertips. This enables fast and powerful feedback to decision makers. Data collection forms are created using an Excel-based template. These are uploaded through a web interface where they are published and added to a group of users. Users in these groups can access the forms and collect data using an iOS or Android device.

Adding functionality

The wide and growing range of input types makes it easy to add photos, sound and notes to your reports. Furthermore, you can easily combine different input types to suit your specific needs, making it easy to empower your workforce with mobile productivity tools. Your form can also be prepared to connect to a wide variety of sensors such as:

- Vibration sensors
- Temperature sensors
- Thermo graphic camera
- Bore scope
- Microscope
- Humidity
- Torque wrench

This list is not exhaustive and SKF can add new measurement types with every new release of the DataCollect app by SKF to help ensure you have access to the latest in sensor technologies.

Visibility rules can be incorporated into the form so that a user is led through a

series of questions, measurements or actions depending on previously answered questions. Typical examples would be: operational hours, gearbox oil change, gearbox and bearing temperatures or even operational parameters as wind speed or produced MW since last inspection.

A user's understanding of questions can be easily enhanced by the addition of pictures that illustrate what the question refers to – a gauge or a decision on cleanliness of a location, or user manuals for inspection tools, etc., can all be included.

The form can also contain corrective actions. Out of tolerance readings can be rectified instantly, removing the requirement to inform the maintenance department. This brings the system back to optimum performance levels as soon as the discrepancy is detected.

Stay always up to date with the latest technology

With SKF's two year lease plan, you can choose from the following devices: Ipad and Ipad mini (both supplied with a protection case) or Samsung Galaxy Tab Active (with internal build-in protection). This protection will allow them to be dropped from 2 meters and be waterproof for up to 2 minutes to a depth of 1 meter.

We replace the device after two years with a brand new one, if you continue with the lease plan. So you will always be up to date with the latest technology.

For those who need a safety certification to work in areas where explosion safety is critical, we also offer a device certified to Atex Zone 1.

Subscription-based services

SKF Enlight connects you to subscription-based services with an annual "per user" fee that includes the right mobility devices for your needs, and gives you access to SKF Enlight forms and cloud storage. That means no long budget discussions or asset planning – just sign up and you'll have everything you need to get started with no capital investment.

Key features:

- Easy to use
- Powerful way to customize a wide range of input types
- Easily collect a wide array of sensor data directly into SKF Enlight
- Instantly view your data collection progress directly on the device
- Annotate answers with photos, sounds and notes to further enrich your observations
- All your data is uploaded and securely stored in the safety of SKF Cloud
- Work offline in environments where internet connection is unavailable
- Fast feedback to decision makers in the organization with our reporting features
- Request support from our global network of Remote Diagnostic Centres who possess over 100 years of SKF knowledge and experience
- Set up your business process steps and walk your users through forms and questions

Typical uses

- Turbine and components inspection (e.g. bearings, gearbox)
- Turbine assembly documentation
- Basic condition monitoring
- End of warranty inspections
- Automated report generation

SINCE THIS STYLE OF JAMB-NUT IS INDEXED IT MIGHT BE NECESSARY TO SLIGHTLY OVERTIGHTEN OR LOOSEN THE JAMB NUT IN ORDER TO GET THE LOCKING TAB TO LINE UP

RE-ASSEMBLY

COMPLETE THE CLOSING UP ACTIONS

Completed?

REINSTALL END COVER AND TORQUE BOLTS TO 530 ft-lbs	
INSTALL JAM-NUT AND TIGHTEN UNTIL IT IS SNUG AGAINST THE BEARING INNER RACE	
INSTALL LOCKING TAB AND TORQUE TO 155 ft-lbs	
REPLACE THE SHROUD ASSEMBLY	

Sample question structure

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